What is claimed is:

1. An apparatus which controls tilting of a tilt mirror, said apparatus comprising:

a control signal producing unit which produces a control signal, for feed-forward controlling of the tilting of said mirror, based on a parameter that determines a target tilt angle of said tilt mirror;

a digital filter that removes a resonance frequency component, which is caused by movement of said tilt mirror into a desired angle, in said control signal, which is produced by said control signal producing unit; and

a square root calculating unit that performs digital square-root calculation so as to compensate for non-linearity of said control signal, from which said resonance frequency component has been removed.

2. An apparatus as set forth in claim 1, wherein said control signal producing unit includes:

a parameter input unit which inputs said parameter as said target tilt angle and driving property information of said tilt mirror; and

an arithmetic operation unit which obtains said control signal by arithmetic operation based on said target tilt angle and said driving property information of said tilt mirror, both of which are input by said parameter input unit.

3. An apparatus as set forth in claim 2, said apparatus further comprising:

a plurality of electrodes arranged for each said tilt mirror; and

a switch that selects, based on said control signal, one of said plurality of electrodes to which said control signal is provided.

4. An apparatus as set forth in claim 2, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

5. An apparatus as set forth in claim 3, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

6. An apparatus as set forth in claim 1, said apparatus further comprising:

a plurality of electrodes arranged for each said tilt mirror; and

a switch that selects, based on said control signal, one of said plurality of electrodes to which said control signal is provided.

7. An apparatus as set forth in claim 6, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

8. An apparatus as set forth in claim 1, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

9. A method for controlling tilting of a tilt mirror, said method comprising the steps of:

producing a control signal, for controlling the tilting of said mirror, based on a parameter which determines a target tilt angle of said tilt mirror;

removing a resonance frequency component, which is caused by movement of said tilt mirror into a desired angle, from said control signal by a digital filter; and

performing digital square-root calculation so as to compensate for non-linearity of said control signal.

10. An apparatus which controls tilting of a tilt mirror which is controlled by electrostatic attraction, said apparatus comprising:

a control signal producing unit which produces a control signal, for controlling the tilting of said mirror, based on a parameter that determines a target tilt angle of said tilt mirror; and

a non-linearity compensation calculating unit which performs voltage approximate calculation so as to compensate for non-linearity, in said control signal obtained by said control signal producing unit, of said tilt angle against electrostatic capacity of said tilt mirror, a driving signal

for driving said tilt mirror being thereby produced.

11. An apparatus as set forth in claim 10, wherein said non-linearity compensation calculating unit includes a non-linearity compensation calculating table which stores, as result of such voltage approximate calculation, voltage V_d of said driving signal given by:

$$V_d = \sqrt{\frac{\theta_{\max}}{Vc_{\max}} V_c \Big/ \alpha\left(\frac{\theta_{\max}}{Vc_{\max}} V_c\right)} \quad \ldots \text{(C-4)}$$

where V_c represents a voltage of said control signal; Vc_{max} represents a maximal value of the voltage of said control signal; θ_{max} is a maximal value of said tilt angle.

12. An apparatus as set forth in claim 11, wherein said non-linearity compensation calculating unit further includes:

a gain information storing unit which stores gain information, one information item for each of said plurality of tilt mirrors having an identical construction, each said information item compensating for a spring constant error of a corresponding one of said plurality tilt mirrors; and

a gain adjusting unit which adjusts an output gain of said non-linearity compensation calculating table based on said gain information stored in said gain information storing unit.

13. An apparatus as set forth in claim 12, wherein said control signal producing unit has a digital filter which removes, from the control signal, a resonance frequency component caused by movement of said tilt mirror into a desired angle.

14. An apparatus as set forth in claim 12, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

15. An apparatus as set forth in claim 13, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

16. An apparatus as set forth in claim 11, wherein said control signal producing unit has a digital filter which removes, from the control signal, a resonance frequency component caused by movement of said tilt mirror into a desired angle.

17. An apparatus as set forth in claim 16, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

18. An apparatus as set forth in claim 11, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

19. An apparatus as set forth in claim 10, wherein said control signal producing unit has a digital filter that removes, from the control signal, a resonance frequency component, which is caused by movement of said tilt mirror into a desired angle.

20. An apparatus as set forth in claim 19, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

21. An apparatus as set forth in claim 10, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

22. An apparatus as set forth in claim 21, such MEMS tilt mirror having a comb-shaped electrode to receive said driving signal.

23. A method for controlling tilting of a tilt mirror which is controlled by electrostatic attraction, said method comprising the steps of:

producing a control signal, for controlling the tilting of said mirror, based on a parameter which determines a target tilt angle of said tilt mirror; and

performing voltage approximate calculation so as to compensate for non-linearity, in said control signal obtained by said control signal producing unit, of said tilt angle

against electrostatic capacity of said tilt mirror, a driving signal for driving said tilt mirror being thereby produced.

24. An apparatus which controls tilting of a tilt mirror which is controlled by electrostatic attraction, said apparatus comprising:

a control signal producing unit which produces a control signal for controlling the tilting of said mirror; and

a pulse waveform compensation unit which controls and compensates for a pulse waveform that appears in initial part of the control signal, which is produced by said control signal producing unit.

25. An apparatus as set forth in claim 24, further comprising a band elimination filter, disposed between said control signal producing unit and said pulse waveform compensation unit, which filter removes, from the control signal, a resonance frequency component caused by movement of said tilt mirror into a desired angle and produces a step signal,

said pulse waveform compensation unit controlling only the pulse waveform which appears in the initial part of the step signal.

26. An apparatus as set forth in claim 25, wherein said band elimination filter is a digital filter.

27. An apparatus as set forth in claim 24, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

28. An apparatus as set forth in claim 25, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

29. An apparatus as set forth in claim 26, wherein said tilt mirror is an MEMS (Micro Electro Mechanical Systems) mirror.

30. A method for controlling tilting of a tilt mirror, said method comprising the steps of:

producing a control signal for controlling the tilting of said mirror; and

controlling and compensating for a pulse waveform appearing in initial part of the control signal which is produced by said control signal producing unit.